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CODING OF MOVING PICTURES AND ASSOCIATED AUDIO

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Title   : Evaluation of SM3 for MPEG2
Source   : A. Koster, PTT Research
Groups   : Video, Requirements and Implementation
Purpose : Discussion

During the last MPEG meeting in Kurihama it came clear that
MPEG/Video was in favour of starting MPEG2 with the MPEG1
algorithm and therefore MPEG/Video intended to start with a
modified SM3 as being TM0.

Before MPEG really starts to define TM0 it might be worthwhile
to discuss the shortcomings of MPEG1 for the requirements of
MPEG2 as described in the PPD (MPEG91/100).

In section 3.4 of the PPD there are several items mentioned
as:

End to end delay
In the coding/decoding delay subsection there is mentioned:
-    Short coding/decoding delay for conversational service
     (e.g. less then 150 ms ...)".
This requirement needs particular attention, and evaluation of
MPEG and CCITT SG XV.

Error protection
In the error protection subsection there is mentioned:
-    Selective protection for headers etc.
Is not taken care of in MPEG1/Video or Systems.

-    More frequent synchronization words for noisy channels.
Is not part of the MPEG1 syntax, further study is necessary.

-    Error resilience for cell loss encountered in ATM
     networks.
This is not a part of MPEG1.

-    In the presence of uncorrectable errors, the decoder
     should fail gracefully (...) to maintain acceptable
     output.
This not done in MPEG1.

Adaptation to various storage and transport methods

In this subsection there is mentioned:

- The video coding system must optimize performance, in terms of picture quality and end to end delay, on the B-ISDN. This must include cell loss tolerance and could take advantage of VBR coding.

This item needs special attention, during the Kurihama test several solutions where included in different proposals. These solutions need to be discussed.

- The video coding system must permit advantage to be taken of the flexibility of transport offered by the B-ISDN; high/low priority channels, VC (Virtual Channel) based multimedia multiplex, multipoint distribution in the network etc.

The MPEG1 system does not allow this.

- The video coding system must have adequate performance at low C/N levels. The video coding systems must provide a graceful failure mode during heavy rain attenuation periods, provide robustness against interference, etc.

No special attention is given to the above mentioned items in MPEG1.

Compatibility

The conclusion on the compatibility issue:

- This issue should be further studied from various points of view. It is noted that several contributions have suggested "layered coding" may provide a solution for the compatibility issue.

The Singapore meeting is at the proper place and time to start this discussion.

Conclusion

Although the MPEG1 work is a good basis for the work for MPEG2. The MPEG1 standard is not sufficient to support all requirements imposed by MPEG and CCITT SG XV. MPEG and CCITT SG XV should therefore take all requirements of the PPD into consideration and take the appropriate actions for the definition of TM0.